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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,774	01/31/2006	Satoshi Okudera	WOO1-5697 (PCT)	7817

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EXAMINER	
STIMPERT, PHILIP EARL	
ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,774	OKUDERA ET AL.	
	Examiner	Art Unit	
	Philip Stimpert	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-10,13-15 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 5-10, 13-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita (US 6,599,108) in view of Shrader (US 3,877,546) and Pullen et al. (US 6,304,011, Pullen hereafter).

3. Regarding claim 5, Yamashita teaches a vacuum pump which generates vacuum by sucking and discharging a gas, comprising a pump case (1) for the vacuum pump, a thread pump stator (7) that supports the pump case, a base (not labeled, see Fig. 1) that supports the thread pump stator (7), a stator column (14) formed integrally with the base, and rotating blades (4, 5) arranged in multiple stages on a rotor (2) which covers the stator column (14). Yamashita does not teach a cooling water pipe buried in the stator. Shrader teaches a vacuum pump having a stator column and a cooling water pipe (119) buried in the stator column. Shrader teaches that the cooling water pipe provides cooling to the stator column. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to bury a cooling water pipe as taught by Shrader in the stator column of Yamashita in order to provide cooling thereto. Neither Yamashita nor Shrader teach that each end of the cooling water pipe branches into a plurality of ports. Pullen teaches a cooling system for a rotary electrical machine.

In particular, Pullen teaches a liquid channel arrangement (Figs. 10A and 10B) which provides a large conducting surface for transferring heat to a cooling liquid, such as water (col. 2, ln. 33). This channel arrangement includes a short pipe (the disk is cylindrical with its axis coming out of the page) in which a number of inlet ports (Fig. 10A) converge cooling liquid into a single, central area, and then disperse through a second set of ports (Fig. 10B). Those of ordinary skill in the art are aware that conduction of heat is proportional to the area across which the conduction. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a channel structure such as that taught by Pullen to increase the cooling heat flux of the water pipe being provided to Yamashita by Shrader.

4. Regarding claim 6, Yamashita teaches that the pump case has a flange (which would serve as a fastening portion) at the bottom thereof that one of ordinary skill in the art would expect to be fastened to the thread pump stator (7) via the base (and the flange of the thread pump stator 7 visible in Fig. 1) and to provide at least radial support to the pump case.

5. Regarding claim 7, Yamashita teaches that the external casing of the pump is substantially formed by the pump case (1), the thread pump stator (7) and the base.

6. Regarding claim 8, Yamashita teaches that inner and outer peripheral surfaces of the stator column are different in shape (frustoconical and stepped respectively).

7. Regarding claim 9, Yamashita teaches a second cooling water pipe (25) arranged in the base and thus substantially on the outer surface of the thread pump stator (7).

8. Regarding claim 10, Yamashita teaches a heating element (10) arranged substantially on the outer surface of the thread pump stator (7).

9. Regarding claim 13, Shrader teaches a joint (121) and a "similar arrangement" presumably including a similar joint, each provided at the inlet and outlet of the cooling water pipe respectively. Shrader further teaches that the joint (121) is partially buried in the vacuum pump, and is flush (contiguous) with the external surface of the pump.

10. Regarding claim 14, Shrader does not teach particular materials for the cooling water pipe or the joint (121). One of ordinary skill would find it obvious to form these element from the same material however, if for no better reason than to simplify the procurement for manufacture of the pumps.

11. Regarding claim 15, Yamashita teaches a vacuum pump which generates vacuum by sucking and discharging a gas, comprising a pump case (1) for the vacuum pump, a thread pump stator (7) that supports the pump case and which is arranged on a base (not labeled, see Fig. 1) that supports the thread pump stator (7) from below, a stator column (14) formed integrally with the base, and rotating blades (4, 5) arranged in multiple stages on a rotor (2) which covers the stator column (14). Yamashita does not teach a cooling water pipe buried in the stator. Shrader teaches a vacuum pump having a stator column and a cooling water pipe (119) buried in the stator column. Shrader teaches that the cooling water pipe provides cooling to the stator column. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to bury a cooling water pipe as taught by Shrader in the stator column of Yamashita in order to provide cooling thereto. Neither Yamashita nor Shrader teach that each end of

the cooling water pipe branches into a plurality of ports. Pullen teaches a cooling system for a rotary electrical machine. In particular, Pullen teaches a liquid channel arrangement (Figs. 10A and 10B) which provides a large conducting surface for transferring heat to a cooling liquid, such as water (col. 2, ln. 33). This channel arrangement includes a short pipe (the disk is cylindrical with its axis coming out of the page) in which a number of inlet ports (Fig. 10A) converge cooling liquid into a single, central area, and then disperse through a second set of ports (Fig. 10B). Those of ordinary skill in the art are aware that conduction of heat is proportional to the area across which the conduction. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a channel structure such as that taught by Pullen to increase the cooling heat flux of the water pipe being provided to Yamashita by Shrader.

12. Regarding claim 17, Yamashita teaches a heating element (10) arranged substantially on the outer surface of the thread pump stator (7).

13. Regarding claim 18, Shrader teaches a joint (121) and a "similar arrangement" presumably including a similar joint, each provided at the inlet and outlet of the cooling water pipe respectively. Shrader further teaches that the joint (121) is partially buried in the vacuum pump, and is flush (contiguous) with the external surface of the pump.

14. Regarding claim 19, Shrader does not teach particular materials for the cooling water pipe or the joint (121). One of ordinary skill would find it obvious to form these element from the same material however, if for no better reason than to simplify the procurement for manufacture of the pumps.

15. Regarding claim 20, , Yamashita teaches a vacuum pump which generates vacuum by sucking and discharging a gas, comprising a pump case (1) for the vacuum pump, a rotor (2), an electrical equipment section (13) that rotatably supports and drives the rotor (2), a stator (7) that has a thread pump section (8) that coacts with the rotor to create the vacuum, and a stator column (14) that is integral with the stator (7) and contains the electrical equipment section (13). Yamashita does not teach a cooling water pipe buried in the stator. Shrader teaches a vacuum pump having a stator column and a cooling water pipe (119) buried in the stator column. Shrader teaches that the cooling water pipe provides cooling to the stator column. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to bury a cooling water pipe as taught by Shrader in the stator column of Yamashita in order to provide cooling thereto. Neither Yamashita nor Shrader teach that each end of the cooling water pipe branches into a plurality of ports. Pullen teaches a cooling system for a rotary electrical machine. In particular, Pullen teaches a liquid channel arrangement (Figs. 10A and 10B) which provides a large conducting surface for transferring heat to a cooling liquid, such as water (col. 2, ln. 33). This channel arrangement includes a short pipe (the disk is cylindrical with its axis coming out of the page) in which a number of inlet ports (Fig. 10A) converge cooling liquid into a single, central area, and then disperse through a second set of ports (Fig. 10B). Those of ordinary skill in the art are aware that conduction of heat is proportional to the area across which the conduction. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a channel structure such as that

taught by Pullen to increase the cooling heat flux of the water pipe being provided to Yamashita by Shrader.

Allowable Subject Matter

16. Claims 12, 16, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: the limitation of the branches of the water inlet and outlet ports being formed in the base of the pump and being communicated specifically with the side and bottom surfaces of the base is not shown in or considered obvious over the art of record.

Response to Arguments

18. Applicant's arguments with respect to obviousness have been considered but are moot in view of the new ground(s) of rejection.

19. The rejections under 35 U.S.C. 112 and the objections to the abstract and drawings have been addressed and overcome by the present amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

/P. S./
Examiner, Art Unit 3746
28 August 2009